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Technology Update

Southern Region, USDA Forest Service, 1720 Peachtree Rd., N.W., Atlanta, Ga. 30367

Southern Pine Beetle Fact Sheet Number 35

TEXAS HAZARD — A Stand Hazard Rating Method

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Purpose

This southern pine beetle (SPB) fact sheet discusses the use of a hazard-rating procedure called Texas Hazard. This program, in table or computerized format, can be used to rate the susceptibility of pine stands to SPB attack.

Description

Texas Hazard rates stand condition classes for susceptibility to SPB attack. The procedure was developed for mixed and pure pine forests in east Texas. Texas Hazard is based on data collected from 1,100 plots during a period of moderately high beetle activity, from 1973 to 1975. The model was tested on more than 1 million acres in east Texas, and 177,000 acres in Louisiana. These tests included aerial photo hazard ratings and historical infestation records. Testing is continuing in Texas as new infestations occur.

Inputs

Required

Basal area per acre, average stand height or d.b.h., and landform (bottom, ridge, other), as presented in table 1. Landform is considered more of an indicator of moisture regime than of true topographical position. Thus, bottomlands are associated with moist, low-lying pine sites; ridges pertain to dryer, upland sites; and other land forms reflect intermediate conditions.

Optional

Number of acres in each hazard class by stand or ownership.

Table 1.—Stand hazard rating inputs

Pine basal area (ft^2/acre)	LANDFORM: Ridge — Tree height (feet) <50	Ridge 50–75	Ridge >75	Other terrain <50	Other terrain 50–75	Other terrain >75	Bottom <50	Bottom 50–75	Bottom >75	
<80	low	low	low	low	low	low	low	low	med	HAZARD
80–120	low	low	med	low	med	med	med	med	high	
>120	low	med	med	med	high	high	med	high	high	
	Tree diameter (inches) <6	6–12	>12	<6	6–12	>12	<6	6–12	>12	

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Outputs

The SPB hazard is determined by basal area per acre, tree height or d.b.h., and landform class (table 1). Stands rated as high hazard will tend to support an average of five to ten times as many infestations as stands of low hazard. Similarly, stands of moderate hazard are likely to have two to three times as many beetle infestations as low-hazard stands over an extended period.

Accessibility

Use table 1 or a circular slide rule called Texas Hazard Rating Guide. Copies of the slide rule are available without charge from the School of Forestry, Stephen F. Austin State University, Nacogdoches, TX 75962. (Telephone 409/569-3301.)

Copies of Texas Hazard are available on an Apple microcomputer program without charge. Send a blank diskette to Wesley A. Nettleton, USDA Forest Service, S&PF, Forest Pest Management,2500 Shreveport Highway, Pineville, LA 71360. The diskette that will be returned to you will also contain four additional computer programs: Arkansas Hazard, Mississippi Hazard, Mountain Risk, and Piedmont Hazard.

References

Mason, G.N.; Hicks, R.R.,Jr.; Bryant, C.M.V.; Mathews, M.L.; Kulhavy, D.L.; Howard, J.E. Rating southern pine beetle hazard by aerial photography. In: Hedden, R.L.; Barras, S.J.; Coster, J.E., eds. Proceedings, Symposium on hazard rating systems in forest insect pest management. General Technical Report WO-27. Washington, DC: U.S. Department of Agriculture, Forest Service; 1980: 109-114.

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